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EXAMINER

RENNER, CRAIG A

ART UNIT	PAPER NUMBER
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2627

DATE MAILED: 09/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/823,930

Applicant(s)

TIAN ET AL.

Examiner

Craig A. Renner

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of "claims 1-16, (Group I)" and cancellation on non-elected "claims 17-20, (Group II)," in the reply filed on 20 September 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Drawings***

2. The drawings are objected to because of the following informalities:
- a. The drawings fail to comply with 37 CFR 1.84(p)(5) because they include one or more reference signs not mentioned in the description. Note, for instance, "12" (shown in Figure 1, for instance) and " $\alpha$ " (shown in Figure 2, for instance).
  - b. Figures 2, 3a and 3b should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) and/or an amendment to the specification in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin

as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

4. The disclosure is objected to because of the following informalities:

In line 1 in each of claims 1-16, the status identifier --(Original)-- should be inserted after the claim number in order to be in compliance with 37 CFR § 1.121(c). Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 9-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. In line 5 of claim 9, "the data storage medium" is indefinite because it lacks clear and/or positive antecedent basis.
- b. Claims 10-16 inherit the indefiniteness associated with independent claim 9 and stand rejected as well.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 4-7, 9 and 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by applicant's admitted prior art Figures 2 and 3a and detailed description thereof.

With respect to claims 1 and 4-7, applicant's admitted prior art Figures 2 and 3a and detailed description thereof teaches a slider (Figure 3a, for instance) comprising a body with a width (320) of 1.0mm or smaller (line 6 in paragraph [0006], for instance, i.e., "1mm in width 320") and a length (310) greater than 0.85mm (line 6 in paragraph [0006], for instance, i.e., "1.25mm in length 310"); and an air-bearing surface (as shown in Figure 3a, for instance) to allow the slider to glide above a moving data storage medium (76) [as per claim 1]; wherein the length of the body is 3.0 mm or smaller (line 6 in paragraph [0006], for instance, i.e., "1.25mm in length 310") [as per claim 4]; wherein

the slider further comprises a U-shaped rail extending from the air-bearing surface proximately located to a leading edge of the air-bearing surface (as shown in Figure 3a, for instance) [as per claim 5]; wherein the U-shaped rail has two surfaces at differing heights (as shown in Figure 3a, for instance), each surface parallel to the air-bearing surface (as shown in Figure 3a, for instance) [as per claim 6]; and wherein the slider further comprises a main compression pad extending from the air-bearing surface proximately located to a trailing edge of the air-bearing surface (as shown in Figure 3a, for instance) [as per claim 7].

With respect to claims 9 and 12-15, applicant's admitted prior art Figures 2 and 3a and detailed description thereof teaches a disk drive (Figure 2, for instance) comprising a data storage disk (76); a slider (Figure 3a, for instance) with a width (320) of 1.0mm or smaller (line 6 in paragraph [0006], for instance, i.e., "1mm in width 320"), a length (310) greater than 0.85mm (line 6 in paragraph [0006], for instance, i.e., "1.25mm in length 310"), and an air-bearing surface (as shown in Figure 3a, for instance) to allow the slider to glide above the data storage disk when moving (as shown in Figure 2, for instance); and a head gimbal assembly (40) to suspend the slider above the data storage medium (as shown in Figure 2, for instance) [as per claim 9]; wherein the length of the slider is 3.0 mm or smaller (line 6 in paragraph [0006], for instance, i.e., "1.25mm in length 310") [as per claim 12]; wherein the disk drive further comprises a U-shaped rail extending from the air-bearing surface proximately located to a leading edge of the air-bearing surface (as shown in Figure 3a, for instance) [as per claim 13]; wherein the U-shaped rail has two surfaces at differing heights (as shown in Figure 3a, for instance),

each surface parallel to the air-bearing surface (as shown in Figure 3a, for instance) [as per claim 14]; and wherein the disk drive further comprises a main compression pad extending from the air-bearing surface proximately located to a trailing edge of the air-bearing surface (as shown in Figure 3a, for instance) [as per claim 15].

9. Claims 1, 4-7, 9 and 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Wada et al. (US 6,144,529).

With respect to claims 1 and 4-7, Wada et al. (US 6,144,529) teaches a slider (1) comprising a body with a width of 1.0mm or smaller (lines 52-53 in column 15, for instance, i.e., "width of 1.00 mm or less" includes values within the claimed range) and a length greater than 0.85mm (line 52 in column 15, for instance, i.e., "length of 1.25 mm or less" includes values within the claimed range); and an air-bearing surface to allow the slider to glide above a moving data storage medium (4, as shown in FIG. 8, for instance) [as per claim 1]; wherein the length of the body is 3.0 mm or smaller (line 52 in column 15, for instance, i.e., "length of 1.25 mm or less" includes values within the claimed range) [as per claim 4]; wherein the slider further comprises a U-shaped rail (includes 100, 110 and 120, for instance) extending from the air-bearing surface proximately located to a leading edge (LE) of the air-bearing surface (as shown in FIG. 1, for instance) [as per claim 5]; wherein the U-shaped rail has two surfaces (includes 100 and 112/122, for instance) at differing heights (as shown in FIG. 1, for instance), each surface parallel to the air-bearing surface (as shown in FIG. 3, for instance) [as per claim 6]; and wherein the slider further comprises a main compression pad (140)

extending from the air-bearing surface proximately located to a trailing edge (TR) of the air-bearing surface (as shown in FIG. 1, for instance) [as per claim 7].

With respect to claims 9 and 12-15, Wada et al. (US 6,144,529) teaches a disk drive comprising a data storage disk (4); a slider (1) with a width of 1.0mm or smaller (lines 52-53 in column 15, for instance, i.e., "width of 1.00 mm or less" includes values within the claimed range), a length greater than 0.85mm (line 52 in column 15, for instance, i.e., "length of 1.25 mm or less" includes values within the claimed range), and an air-bearing surface to allow the slider to glide above the data storage disk when moving (as shown in FIG. 8, for instance); and a head gimbal assembly (5) to suspend the slider above the data storage medium (as shown in FIG. 8, for instance) [as per claim 9]; wherein the length of the slider is 3.0 mm or smaller (line 52 in column 15, for instance, i.e., "length of 1.25 mm or less" includes values within the claimed range) [as per claim 12]; wherein the disk drive further comprises a U-shaped rail (includes 100, 110 and 120, for instance) extending from the air-bearing surface proximately located to a leading edge (LE) of the air-bearing surface (as shown in FIG. 1, for instance) [as per claim 13]; wherein the U-shaped rail has two surfaces (includes 100 and 112/122, for instance) at differing heights (as shown in FIG. 1, for instance), each surface parallel to the air-bearing surface (as shown in FIG. 3, for instance) [as per claim 14]; and wherein the disk drive further comprises a main compression pad (140) extending from the air-bearing surface proximately located to a trailing edge (TR) of the air-bearing surface (as shown in FIG. 1, for instance) [as per claim 15].

10. Claims 1-2, 4-7, 9-10 and 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Ueno et al. (US 2002/0126418).

With respect to claims 1-2 and 4-7, Ueno et al. (US 2002/0126418) teaches a slider (100) comprising a body with a width of 1.0mm or smaller (lines 11-17 in paragraph [0053], for instance, i.e., "0.7 mm") and a length greater than 0.85mm (lines 11-17 in paragraph [0053], for instance, i.e., "1 mm"); and an air-bearing surface to allow the slider to glide above a moving data storage medium (2, as shown in FIG. 4A, for instance) [as per claim 1]; wherein the body has a thickness of 0.23 mm or smaller (lines 11-17 in paragraph [0053], for instance, i.e., "0.23 mm") [as per claim 2]; wherein the length of the body is 3.0 mm or smaller (lines 11-17 in paragraph [0053], for instance, i.e., "1 mm") [as per claim 4]; wherein the slider further comprises a U-shaped rail (includes 35 and 37, for instance) extending from the air-bearing surface proximately located to a leading edge (31) of the air-bearing surface (as shown in FIG. 1B, for instance) [as per claim 5]; wherein the U-shaped rail has two surfaces (35 and 37) at differing heights (as shown in FIGS. 1A and 1B, for instance), each surface parallel to the air-bearing surface (as shown in FIG. 1A, for instance) [as per claim 6]; and wherein the slider further comprises a main compression pad (36) extending from the air-bearing surface proximately located to a trailing edge (32) of the air-bearing surface (as shown in FIG. 1B, for instance) [as per claim 7].

With respect to claims 9-10 and 12-15, Ueno et al. (US 2002/0126418) teaches a disk drive comprising a data storage disk (2); a slider (1) with a width of 1.0mm or smaller (lines 11-17 in paragraph [0053], for instance, i.e., "0.7 mm"), a length greater

than 0.85mm (lines 11-17 in paragraph [0053], for instance, i.e., "1 mm"), and an air-bearing surface to allow the slider to glide above the data storage disk when moving (as shown in FIG. 4A, for instance); and a head gimbal assembly (10) to suspend the slider above the data storage medium (as shown in FIG. 2, for instance) [as per claim 9]; wherein the slider has a thickness of 0.23 mm or smaller (lines 11-17 in paragraph [0053], for instance, i.e., "0.23 mm") [as per claim 10]; wherein the length of the slider is 3.0 mm or smaller (lines 11-17 in paragraph [0053], for instance, i.e., "1 mm") [as per claim 12]; wherein the disk drive further comprises a U-shaped rail (includes 35 and 37, for instance) extending from the air-bearing surface proximately located to a leading edge (31) of the air-bearing surface (as shown in FIG. 1B, for instance) [as per claim 13]; wherein the U-shaped rail has two surfaces (35 and 37) at differing heights (as shown in FIGS. 1A and 1B, for instance), each surface parallel to the air-bearing surface (as shown in FIG. 1A, for instance) [as per claim 14]; and wherein the disk drive further comprises a main compression pad (36) extending from the air-bearing surface proximately located to a trailing edge (32) of the air-bearing surface (as shown in FIG. 1B, for instance) [as per claim 15].

11. Claims 1, 4-9 and 12-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Koishi et al. (US 2003/0002218).

With respect to claims 1 and 4-8, Koishi et al. (US 2003/0002218) teaches a slider (28) comprising a body with a width of 1.0mm or smaller (lines 7-9 in paragraph [0041], for instance, i.e., "1 mm wide") and a length greater than 0.85mm (lines 7-9 in

paragraph [0041], for instance, i.e., "1.25 mm long"); and an air-bearing surface (includes 72, for instance) to allow the slider to glide above a moving data storage medium (8) [as per claim 1]; wherein the length of the body is 3.0 mm or smaller (lines 7-9 in paragraph [0041], for instance, i.e., "1.25 mm long") [as per claim 4]; wherein the slider further comprises a U-shaped rail (50) extending from the air-bearing surface proximately located to a leading edge (28a) of the air-bearing surface (as shown in FIG. 3, for instance) [as per claim 5]; wherein the U-shaped rail has two surfaces (54 and 56, for instance) at differing heights (as shown in FIG. 3, for instance), each surface parallel to the air-bearing surface (as shown in FIG. 4, for instance) [as per claim 6]; wherein the slider further comprises a main compression pad (52) extending from the air-bearing surface proximately located to a trailing edge (28b) of the air-bearing surface (as shown in FIG. 3, for instance) [as per claim 7]; and wherein the main compression pad has two surfaces (58 and 60, for instance) at differing heights (as shown in FIG. 3, for instance), each surface parallel to the air-bearing surface (as shown in FIG. 4, for instance); and the slider further comprises two outlying compression pads (74 and 76) straddling the main compression pad (as shown in FIG. 3, for instance), wherein each compression pad is on a same level as one of the surfaces of the main compression pad (lines 3-5 in paragraph [0044], for instance) [as per claim 8].

With respect to claims 9 and 12-16, Koishi et al. (US 2003/0002218) teaches a disk drive comprising a data storage disk (8); a slider (28) with a width of 1.0mm or smaller (lines 7-9 in paragraph [0041], for instance, i.e., "1 mm wide"), a length greater than 0.85mm (lines 7-9 in paragraph [0041], for instance, i.e., "1.25 mm long"), and an

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air-bearing surface (includes 72, for instance) to allow the slider to glide above the data storage disk when moving; and a head gimbal assembly (28) to suspend the slider above the data storage medium [as per claim 9]; wherein the length of the slider is 3.0 mm or smaller (lines 7-9 in paragraph [0041], for instance, i.e., "1.25 mm long") [as per claim 12]; wherein the disk drive further comprises a U-shaped rail (50) extending from the air-bearing surface proximately located to a leading edge (28a) of the air-bearing surface (as shown in FIG. 3, for instance) [as per claim 13]; wherein the U-shaped rail has two surfaces (54 and 56, for instance) at differing heights (as shown in FIG. 3, for instance), each surface parallel to the air-bearing surface (as shown in FIG. 4, for instance) [as per claim 14]; wherein the disk drive further comprises a main compression pad (52) extending from the air-bearing surface proximately located to a trailing edge (28b) of the air-bearing surface (as shown in FIG. 3, for instance) [as per claim 15]; and wherein the main compression pad has two surfaces (58 and 60, for instance) at differing heights (as shown in FIG. 3, for instance), each surface parallel to the air-bearing surface (as shown in FIG. 4, for instance); and the disk drive further comprises two outlying compression pads (74 and 76) straddling the main compression pad (as shown in FIG. 3, for instance), wherein each compression pad is on a same level as one of the surfaces of the main compression pad (lines 3-5 in paragraph [0044], for instance) [as per claim 16].

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wada et al. (US 6,144,529).

Wada et al. (US 6,144,529) teaches the disk drive slider as detailed in paragraph 9, supra. Wada et al. (US 6,144,529), however, remains silent as to the slider length being "1.235 mm" and the slider width being "0.7mm."

Official notice is taken of the fact that it is notoriously old and well known in the disk drive slider art to modify the parameters of a disk drive slider during the course of routine optimization/experimentation. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the slider length of Wada et al. (US 6,144,529) be 1.235 mm and the slider width of Wada et al. (US 6,144,529) be 0.7mm. The rationale is as follows:

One of ordinary skill in the art would have been motivated to have had the slider length of Wada et al. (US 6,144,529) be 1.235 mm and the slider width of Wada et al. (US 6,144,529) be 0.7mm since such ranges, absent any criticality (i.e., unobvious and/or unexpected result(s)), are generally achievable through routine optimization/experimentation, and since discovering the optimum or workable ranges, where the general conditions of a claim are disclosed in the prior art, involves only routine skill in the art, *In re Aller*, 105 USPQ 233 (CCPA 1955). Moreover, in the absence of any criticality (i.e., unobvious and/or unexpected result(s)), the parameters set forth above would have been obvious to a person having ordinary skill in the art at the time the invention was made, *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

#### ***Pertinent Prior Art***

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. This includes Ezaki et al. (US 4,928,195), which teaches a slider having a length of 1 to 3 mm and a width of 1 to 2.5 mm (lines 5-10 in the abstract, for instance); Matsuzaki et al. (US 5,200,869), which teaches a slider having a length of 0.5 to 2 mm and a width of 0.5 to 2 mm (lines 43-50 in column 4, for instance); Koishi et al. (US 6,157,518), which teaches a slider having a length of 1.25 mm and a width of 0.25 to 1 mm (lines 43-45 in column 5, for instance); Kohira et al. (US 2001/0030834), which teaches a slider having a length of 1.25 mm or less, a width of 1 mm or less and a thickness of 0.3 mm or less (lines 2-4 in claim 16, for instance); and Ueno et al. (US


2003/0161072), which teaches a slider having a length of 1.235 mm and a width of 1.00 mm and a thickness of 0.3 mm (lines 11-13 in paragraph [0044], for instance).

### ***Conclusion***

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig A. Renner whose telephone number is (571) 272-7580. The examiner can normally be reached on Monday-Tuesday & Thursday-Friday 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Craig A. Renner  
Primary Examiner  
Art Unit 2627

CAR